

School Height and Weight Report

For South Dakota Students
2004-2005 School Year



South Dakota Department of Health
March 2006

PREFACE

School Height and Weight Report, For South Dakota Students, 2004-2005 School Year was prepared by the South Dakota Department of Health.

This report is divided into 18 sections which contain data on childhood obesity as well as guidelines and references for preventing and reversing the childhood obesity epidemic. Sections of note are: Executive Summary, which highlights data at a glance; Technical Notes, which explains the terminology and BMI for children and teens; and Regional Data, which examines the data by the Department of Education's regions.

Also included are instructions and a form for any school interested in submitting data in the future.

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Executive Summary

This report summarizes data collected on school-age children and adolescents during the 2004-2005 school year and also includes data collected since the start of the project in the 1998-1999 school year.

Over the seven years that this data has been collected:

- Sample size has grown from 13% of the state's students to 26.8%.
- School submissions have grown from 110 schools in the first report to 229 schools in the current report.
- For the last three years, no age group has been over the expected 5th percentile for short stature.
- No age group has been over the expected five percent below the 5th percentile in BMI-for-age or underweight.
- Overall, there has been a slight decrease in the "at risk for overweight" category from 16.7% in 1998-1999 to 16.6% in 2004-2005.
- By race, American Indians decreased in the "at risk for overweight" category from 20.4% in 1998-1999 to 18.7% in 2004-2005.
- Overall, there has been an increase in the "overweight" category from 15.1% in 1998-1999 to 16.4% in 2004-2005.
- By race, American Indians increased in the "overweight" category from 21.1% in 1998-1999 to 26.1% in 2004-2005.

Results from the 1999-2002 National Health and Nutrition Examination Survey (NHANES), suggest that since 1994, overweight in youths has not leveled off or decreased, and is increasing to even higher levels. Overweight in children and adolescents was relatively stable from the 1960s to 1980, but has nearly tripled among children and adolescents since. The findings for children and adolescents suggest the likelihood of another generation of overweight adults who may be at risk for subsequent overweight and obesity related health conditions.

2004-2005 data at a glance:

- 3.2% Height-For-Age below 5th percentile. (Short stature)
- 2.4% of children fall below the 5th percentile in BMI-for-age. (Underweight)
- Ages 5-19 years - 16.6% "at risk for overweight".
- American Indians, ages 5-19 years – 18.7% "at risk for overweight".
- Ages 5-19 years – 16.4% are overweight.
- American Indians, ages 5-19 years – 26.1% are overweight.

Technical Notes

Height Short stature is defined as a height-for-age below the 5th percentile for children of the same height and age in the reference populations used by the CDC.

Children grow at different rates depending upon age and gender, the BMI value is plotted on growth charts, and the resulting value of BMI-for-age is presented as a percentile value.

Underweight Children falling below the 5th percentile in BMI-for-age, compared to children of the same gender and age in the CDC reference population, are considered underweight.

At Risk for Overweight If a child's BMI-for-age is between the 85th and 94th percentile in the CDC reference population of children matched for age and gender, the child is considered to be at risk for overweight.

Overweight If a child is at or above the 95th percentile for children of that age and gender, the child is considered to be overweight.

Obesity Obesity is an excessively high amount of body fat or adipose tissue in relation to lean body mass. Adults with a BMI of 25 to 29.9 are considered overweight, while adults with a BMI of 30 or more are considered obese.

Confidence Intervals (CI) The standard error (SE) of a rate is used in health statistics when studying or comparing rates. The SE defines a rate's variability and can be used to calculate a confidence interval (CI) to determine the actual variance of a rate 95 percent of the time. Rates for two different populations (areas, regions) are considered to be significantly different

when their confidence intervals do not overlap.

The standard error and confidence intervals are calculated in the following manner. For example, Region 5's high overweight rate is 23.7 percent. This was based on 1,901 student measurements in 2004-2005. The square root of 1,901 is roughly 43.6. By dividing the rate of 23.7 by 43.6, the estimated SE of approximately 0.54 is the result. The estimated SE can then be used to compute a 95 percent CI for the rate. The standard formula **RATE \pm (1.96 * SE)** is used for determining the 95 percent CI. Following this formula, we produce an equation of $23.7 \pm (1.96 * 0.54)$ and the result is 23.7 ± 1.1 . From this the estimated 95 percent CI is 22.6 to 24.8 percent. It could then be stated, with 95 percent certainty that the actual 2004-2005 overweight rate for Region 5 is between 22.6 and 24.8 percent.

Therefore, Region 5's overweight rate would be considered significantly different from the state rate. This is because the confidence intervals for Region 5 (22.6-24.8) and the state (16.2-16.6) do not overlap. The same can be said for Region 4 (17.3-18.3) and Region 6 (17.6-18.8). Regions 1, 2, and 7 are significantly below the state CI levels. Region 3 is not considered significantly different as the confidence intervals overlap the state wide intervals. See Figure 6 page 13.

BMI (Body Mass Index) The formula to calculate BMI is $\text{weight (lb)} \div \text{height (in)} \div \text{height (in)} \times 703$. This formula is used for adults. See the next page for children and teens BMI.

BMI - Body Mass Index: BMI for Children and Teens

BMI is used differently with children and teens than it is with adults. In children and teens, body mass index for age is used to assess underweight, overweight, and risk for overweight. Girls and boys differ in their body fatness as they mature. This is why BMI for children, also referred to as BMI-for-age, is gender and age specific.^{1, 2} BMI-for-age is plotted on gender specific growth charts. These charts are used for children and teens 2 – 20 years of age. For the 2000 CDC Growth Charts and additional information visit CDC's National Center for Health Statistics website at <http://www.cdc.gov/growthcharts/>.

Each of the CDC BMI-for-age gender specific charts contains a series of curved lines indicating specific percentiles. So if a child is in the 60th percentile it means that compared to children of the same gender and age, 60% have a lower BMI. Healthcare professionals use the following established percentile cutoff points to screen underweight and overweight in children.

Underweight	BMI-for-age < 5th percentile
At risk of overweight	BMI-for-age 85th percentile to < 95th percentile
Overweight	BMI-for-age \geq 95th percentile

BMI decreases during the preschool years, then increases into adulthood. The percentile curves show this pattern of growth.

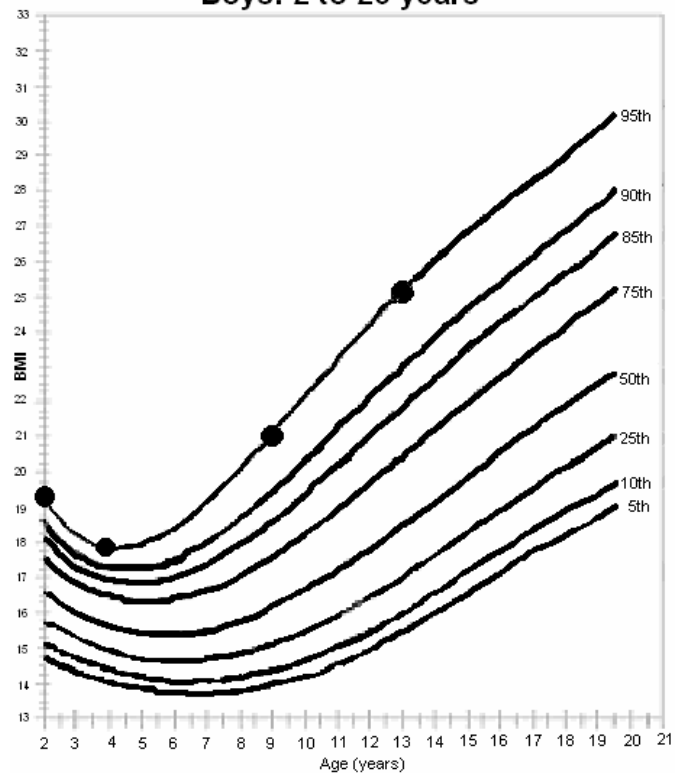
Sample of BMI and Growth Chart

As a boy grows, his BMI changes, but he remains at the 95th percentile BMI-for-age.

Age	BMI	Percentile
2	19.3	95th
4	17.8	95th
9	21.0	95th
13	25.1	95th

The example shows how the boy's BMI declines during his preschool years and increases, as he gets older.

Growth Chart
Boys: 2 to 20 years



BMI-for-Age for children and teens is a useful tool because:

- BMI-for-age provides a reference for adolescents that can be used beyond puberty.
- BMI-for-age in children and adolescents compares well to laboratory measures of body fat.
- BMI-for-age can be used to track body size throughout life.

¹ Hammer LD, Kraemer HC, Wilson DM, Ritter PL, Dornbusch SM. Standardized percentile curves of body-mass index for children and adolescents. *American Journal of Disease of Child.* 1991; 145:259–263.

² Pietrobelli A, Faith MS, Allison DB, Gallagher D, Chiumello G, Heymsfield, SB. Body mass index as a measure of adiposity among children and adolescents: A validation study. *Journal of Pediatrics.* 1998; 132:204–210.

Introduction

Due to increasing rates of child obesity and its health risks, the Department of Health (DOH), in cooperation with the South Dakota Department of Education (DOE), started a process during the 1998-1999 school year to collect data on the height and weight of students. The intent of this data collection effort was to start a data surveillance system of school aged children.

This report summarizes the data collected during the 2004-2005 school year and allows South Dakota to quantify the extent of the childhood overweight problem. In addition, it provides the DOH and DOE the data needed to address the prevention of childhood obesity and decrease it as a public health problem.

Data Collection Process

Some schools routinely obtain height and weight measurements to report physical growth to parents. Letters requesting schools share the height and weight data with the DOH were sent by the Coordinated School Health Program to all South Dakota school superintendents and building principals. A data collection form and instructions on how to measure children (Appendix 1) were included with the letter. Copies of this letter were also sent to health and physical education teachers, and school nurses. Participation in the data collection effort was voluntary and no remuneration was provided.

This project was completed for the seventh time during the 2004-2005 school year.

Comparison To 1998-1999 And 1999-2000 School Year Report

The School Height and Weight Report for South Dakota Students 1998-1999 School Year is not comparable to any report published after it. The 1998-1999 publication reported weight-for-height above the 95th percentile for younger students and Body Mass Index or BMI above the 95th percentile for adolescents between 15.0 percent and 18.0 percent. For male students the reference was through the age of 11 years 6 months and less than 57 inches tall. For females, the reference was through the age of 10 years and less than 54 inches tall. The available BMI standard could be used for students 14 to 18 years of age.

Starting with the report for the 1999-2000 school year, the DOH used BMI-for-age as the criteria for determining if a child was at risk for overweight or overweight.

However, the Centers for Disease Control and Prevention (CDC) reanalyzed the 1998-1999 year data along with this year's data to the same standards and comparisons will be included in this report where possible.

Data Limitations

Data quality has been determined to be within acceptable standard deviation but has the following limitations.

First, schools voluntarily submitted height and weight data from across the state but no attempt was made to obtain a representative sample (Appendix 2 and 3). However, data were collected for 26.8 percent of the state's students from 229 schools, which is 26.3 percent of the state's attendance centers. While American Indian students comprise 15.6 percent of the South Dakota enrollment population, they represent 13.4 percent of the survey respondents.

Second, the Department of Health performed a series of edits on the data and the following types of records were removed: data gathered prior to the 2004-2005 school year, data that had biologically implausible results, and entries where all essential data elements were not completed. After the above cases were removed, the sample size was 37,185 students and 227 schools. Also, CDC excluded 1,696 cases with errors leaving a total of 35,489 cases for analysis.

Third, while the instructions included the type of equipment that should be used, there is no assurance that this was always the case. South Dakota DOH has been providing balance-beam scales and wall-mounted measuring boards to schools to help improve the quality of data. While it is not known what training persons who obtained the measurement had, it is known that much of the data were obtained by, or under the supervision of, school nurses or school health and physical education teachers.

South Dakota's height data are of acceptable quality, however, worldwide measurements of height tend to be of marginal quality. There could be several possible reasons for this including use of measuring equipment that did not allow accurate heights to be obtained. This can occur when the person doing the measuring is shorter than the person being measured. Measurers of adolescents may need to stand on a stool or a bench to have eye level be above the child's head. Also if the measuring stick on a standing scale was used, the children would be inaccurately reported as shorter than they are. South Dakota should be cognizant of this problem when determining heights. This may be solved now as adolescent height is more "normal" but this may explain the high level of short stature for the 1998-1999 school year.

Publication Format

Schools and/or school districts who submitted measurements from 100 or more students are receiving school specific and/or district specific data along with the aggregate data in this report. The requirement total of 100 measurements may occur over a period of three years. Measurements from schools who submitted data from less than 100 students will only be provided with the aggregate data in this report. CDC determined that small numbers do not produce stable rates and established the 100 student cut-off.

Results

These data were compared to the growth charts developed by the Centers for Disease Control and Prevention. The growth charts are based on the body mass index* (BMI) and provide the most up-to-date standard for evaluating body measurements of children. The growth charts provide a reference for adolescents that was not previously available and are consistent with adult standards so they can be used continuously from two years of age to adulthood.

It should be noted even though BMI is an effective screening tool used to identify individuals who are underweight or overweight, it is not a diagnostic tool. For example, a child who is relatively heavy may have a high BMI for his or her age. To determine whether the child has excess fat or is truly overweight, further assessment is needed which may include triceps skinfold measurements, assessments of diet, health, and physical activity.

Height

Short stature is defined as a height-for-age below the 5th percentile for children of the same height and age in the reference populations used by the CDC. Short stature may be evidence of compromised health, delayed development, and poor diet.

Table 1, below, contains the height-for-age data for South Dakota students. The data for South Dakota children ages 5 to 8 indicate that 2.9 percent are below the 5th percentile. The data also indicate that 3.1 percent of children ages 9 to 11, 3.7 percent of students ages 12 to 14, and 3.5 percent of students ages 15 to 19 are below the 5th percentile. Lastly, the data for total students indicate that 3.2 percent are below the 5th percentile. This is the fourth year in a row since this report has begun that no age group is over the expected five percent of students with short stature in South Dakota. Years 1999 to 2005 of height-for-age are illustrated in Figure 1, next page.

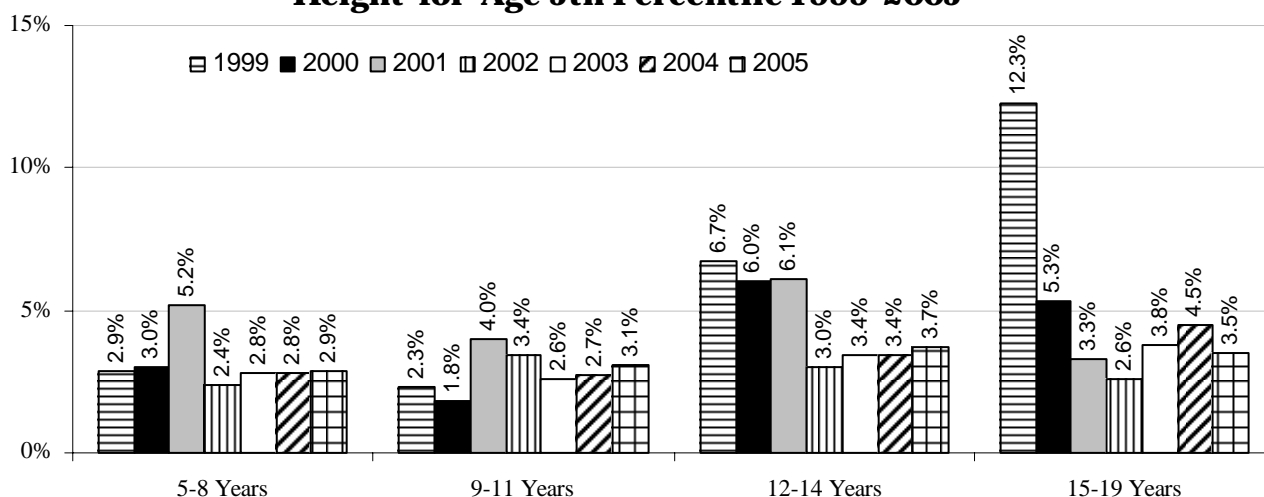
Table 1: School Year 2004-2005 Height-For-Age		
Age	Number Of Students	Height-For-Age Below 5th Percentile
5-8 years	11,686	2.9%
9-11 years	11,394	3.1%
12-14 years	9,292	3.7%
15-19 years	3,117	3.5%
Total	35,489	3.2%

Source: South Dakota Department of Health

Note: Due to changes in the CDC/WHO age and height references these data can not be compared to reports of School Height and Weight for South Dakota Students published before the 2000-2001 school year.

* Body Mass Index is calculated by dividing a person's weight in pounds by their height in inches squared times 703. The mathematical equation for BMI is: $\text{weight (lb)}/\text{height (in)}^2 \times 703$.

Figure 1
Height-for-Age 5th Percentile 1999-2005



Note: Year represents the end of school year, i.e. 1999 is for school year 1998-1999, etc.
1999 rates – refer to page 1 about comparisons.

Source: South Dakota Department of Health

Underweight

Children falling below the 5th percentile in BMI-for-age, compared to children of the same gender and age in the CDC reference population, are considered underweight. The conditions contributing to a low BMI are inadequate dietary intake, failure to thrive, chronic and infectious diseases, and variations within a population. Table 2, below, indicates

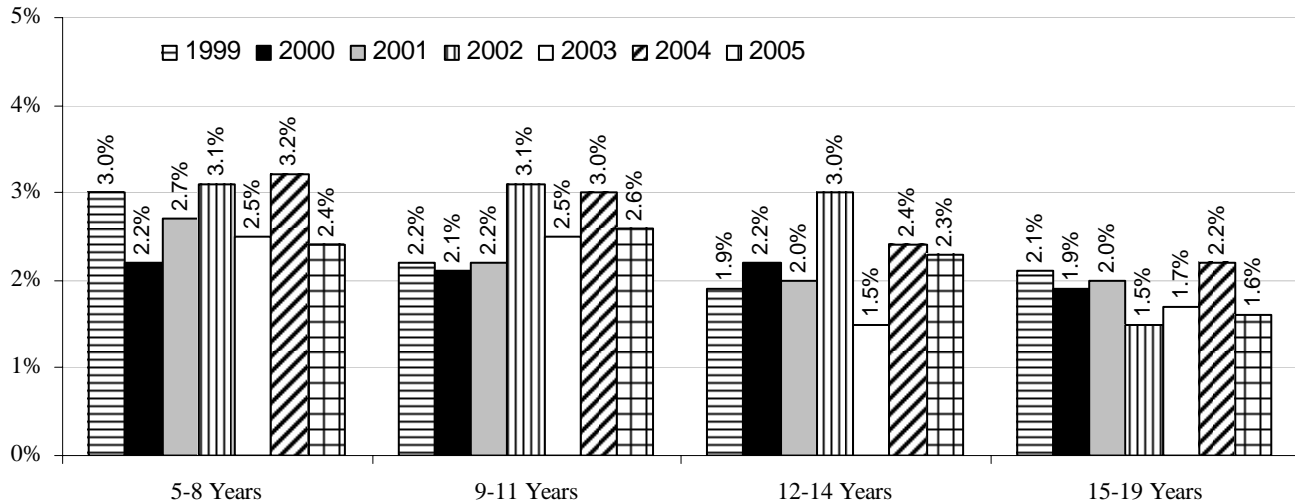
that South Dakota has less than the expected five percent below the 5th percentile of school children from all age groups and as a population are not considered to be underweight when compared to their peers nationally. This is true for all the years of data collected to date, as illustrated in Figure 2, next page.

Table 2: School Year 2004-2005 Underweight Low Body Mass Index For Age		
Age	Number Of Students	Body Mass Index Below 5th Percentile
5-8 years	11,686	2.4%
9-11 years	11,394	2.6%
12-14 years	9,292	2.3%
15-19 years	3,117	1.6%
Total	35,489	2.4%

Source: South Dakota Department of Health

Note: Due to changes in the CDC/WHO age and height references these data can not be compared to data in previous reports prior to the School Height and Weight for South Dakota Students 2000-2001 School Year.

Figure 2
Underweight Weight-for-Height 1999-2005



Note: Year represents the end of school year, i.e. 1999 is for school year 1998-1999, etc.

Source: South Dakota Department of Health

Table 3 provides the percent of underweight students by race. When the data are analyzed by race South Dakota again has less than the expected five

percent below the 5th percentile in each race category except for the combined other races.

Table 3: School Year 2003-2004 Underweight Low Body Mass Index For Age, By Race		
Race	Number Of Students	Body Mass Index Below 5th Percentile
White	27,345	2.5%
American Indian	4,317	1.7%
Other Races	1,063	10.0%
Race Unknown	2,764	2.5%
Total	35,489	2.4%

Source: South Dakota Department of Health

Note: Due to changes in the CDC/WHO age and height references these data can not be compared to data in previous reports prior to the School Height and Weight for South Dakota Students 2000-2001 School Year.

At Risk For Overweight And Overweight

The DOH used BMI-for-age as the criteria for determining if a child was at risk for overweight or overweight. BMI-for-age is the preferred term to describe children and adolescents. For adults, just a BMI value is used, but as children grow at different rates depending upon age and gender, the BMI value is plotted on growth charts and the resulting value of BMI-for-age is presented as a percentile value. If a child's BMI-for-age is between the 85th and 94th percentile in the CDC reference population of children matched for age and gender, the child is considered to be at risk for overweight. If a child is at or above the 95th percentile for children of that age and gender, the child is considered to be overweight.

One of the national Healthy People 2010 objectives is to "reduce the proportion of children and adolescents who are overweight or obese."

This is defined as, "at or above the gender- and age-specific 95th percentile of BMI based on a preliminary analysis of data used to construct the year 2001 U.S. Growth Charts." The term "overweight" is used throughout this report to indicate children and adolescents who meet the criteria for the Healthy People 2010 objective. The target in each of four age groups is five percent.

DOH also has as a goal to "reverse the trend and reduce the percent of school-age children and adolescents who are overweight or obese from 17% in 2003 to 15% by 2010."

Table 4 provides the BMI-for-age statistics for South Dakota students. These data show that for all of the age groups, South Dakota will need to substantially reduce the number of overweight children in order to meet the Healthy People 2010 objective of five percent.

Table 4: School Year 2004-2005 At Risk For Overweight And Overweight Body Mass Index For Age				
Age	Number Of Students	At Risk For Overweight	Overweight	At Risk For Overweight And Overweight Combined
5-8 years	11,686	16.1%	14.3%	30.4%
9-11 years	11,394	17.1%	18.4%	35.5%
12-14 years	9,292	16.8%	16.5%	33.3%
15-19 years	3,117	16.4%	16.0%	32.4%
Total	35,489	16.6%	16.4%	33.0%

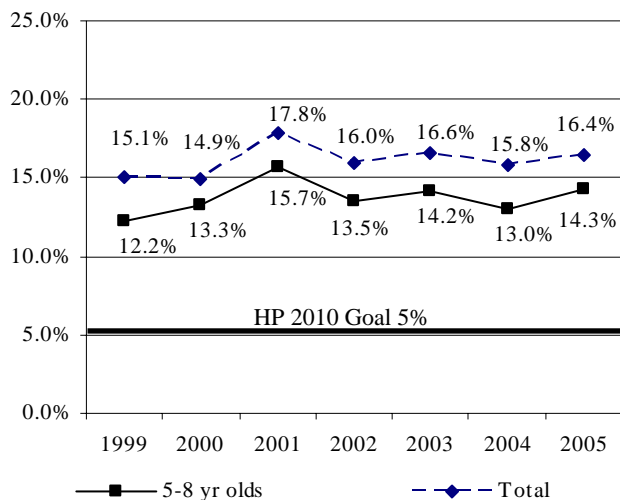
Source: South Dakota Department of Health

Note: Due to changes in the CDC/WHO age and height references, these data can not be compared to data in previous reports prior to the School Height and Weight for South Dakota Students 2000-2001 School Year.

Figure 3 through Figure 6 (below), illustrate each age group's overweight rate by year, compared to that year's rate of all students considered to be overweight.

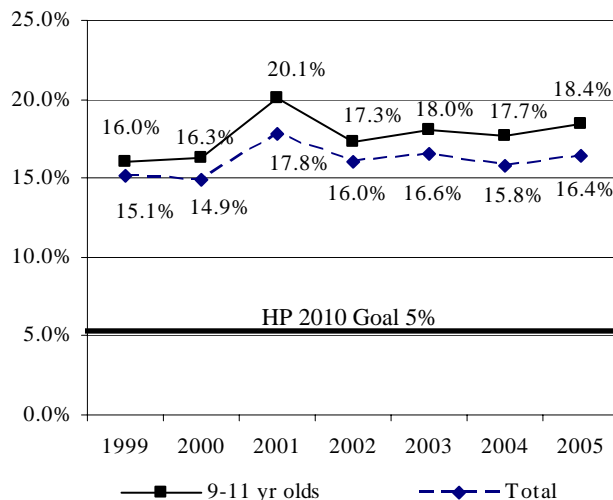
When compared to statewide rates, students ages 9 to 14 are consistently higher than the group as a whole every year, while 5 to 8 year olds are repeatedly lower.

Figure 3: Overweight 5-8 Year Olds Compared to State Totals, 1999-2005



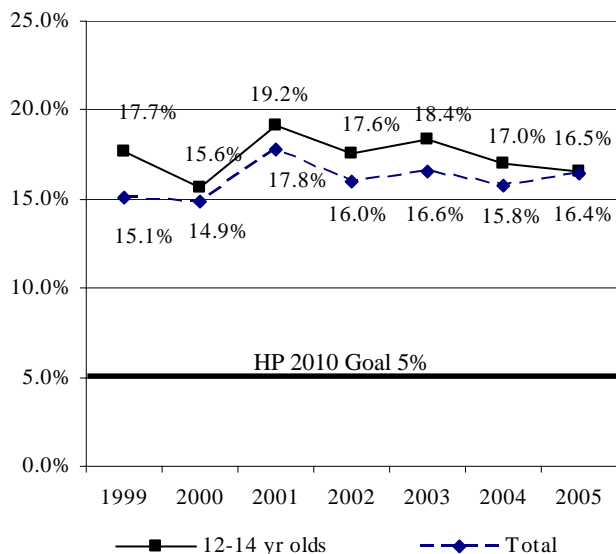
Source: South Dakota Department of Health

Figure 4: Overweight 9-11 Year Olds Compared to State Totals, 1999-2005



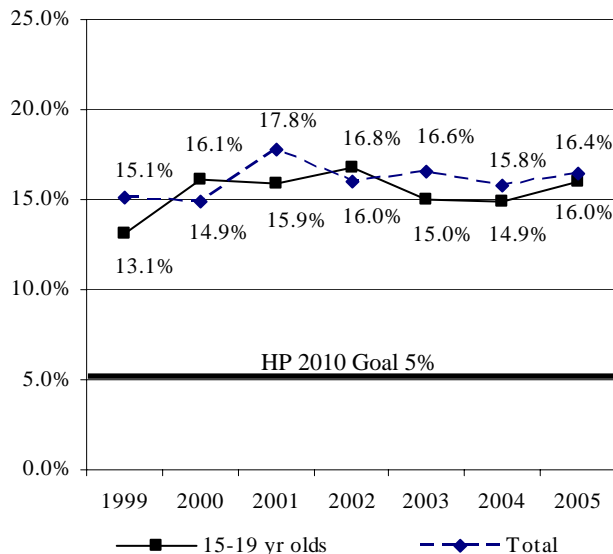
Source: South Dakota Department of Health

Figure 5: Overweight 12-14 Year Olds Compared to State Totals, 1999-2005



Source: South Dakota Department of Health

Figure 6: Overweight 15-19 Year Olds Compared to State Totals, 1999-2005



Source: South Dakota Department of Health

Note: Year represents the end of school year, i.e. 1999 is for school year 1998-1999, etc.

When the body mass index data were analyzed by race in Table 5, 16.2 percent of whites and 18.7 percent of American Indians were between the 85th percentile and 94th percentiles or were at risk for overweight. In addition,

these data indicate that 14.8 percent of whites and 26.1 percent of American Indians were above the 95th percentile or overweight. This is a slight increase for both white and American Indians from the 2003-2004 school year.

**Table 5: School Year 2004-2005
At Risk For Overweight And Overweight
Body Mass Index For Age, By Race**

Race	Number of Students	At Risk For Overweight	Overweight	At Risk For Overweight And Overweight Combined
White	27,345	16.2%	14.8%	31.0%
American Indian	4,317	18.7%	26.1%	44.8%
Other Races	1,063	17.0%	18.5%	35.5%
Race Unknown	2,764	17.1%	15.3%	32.4%
Total	35,489	16.6%	16.4%	33.0%

Source: South Dakota Department of Health

Note: Due to changes in the CDC/WHO age and height references these data can not be compared to data in previous reports prior to the School Height and Weight for

The prevalence of obesity is dramatically rising among children in the United States, particularly among minority populations. There are multiple causes of childhood obesity, most of which are associated with poor nutritional habits and inactivity. Obesity and overweight have been found to be difficult and expensive to treat and cure, therefore preventing this condition in children will be the key to addressing this national epidemic. So far, however, there are few examples of effective obesity prevention programs especially among high risk isolated, rural populations.

Some factors that contributed to obesity in rural areas are: rural children consumed large quantities of “junk food,” fast food, and fried food; access to healthy food choices is limited; and reliance on food stamps can create cycles of household food insufficiency

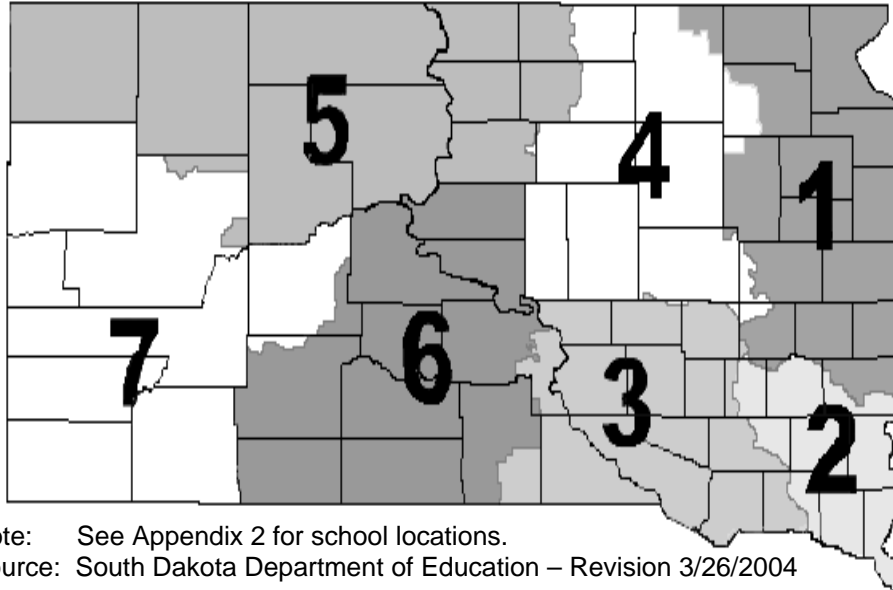
which may prompt children to overeat during times of plenty. More of this rural field assessment can be read at http://www.savethechildren.org/usa/images/Final_Field_Assessment_2005.pdf.

Regional Data

The data for 2004-2005 were once again submitted with an additional code to look at the data not only by county but by education service agency regions. On the next page is a map showing the regions and tables presenting the demographics of those regions.

Region 5 has an overweight percent of 23.7 and 63.2 percent of the participants in region 5 are American Indians. Of the 4,317 American Indian students included in the total submission, 44 percent were submitted from region 5.

**Figure 7: S.D. Education Service Agencies
Region Map**



Note: See Appendix 2 for school locations.

Source: South Dakota Department of Education – Revision 3/26/2004

**Table 6: School Year 2004-2005 Racial
Distribution by Regions**

Region	White	American Indian	Other Race	Unknown
1	88.4%	6.0%	2.4%	3.2%
2	87.5%	1.5%	5.5%	5.6%
3	77.8%	8.5%	2.6%	11.1%
4	85.5%	4.7%	2.3%	7.6%
5	35.7%	63.2%	0.9%	0.2%
6	67.1%	22.3%	4.7%	6.0%
7	64.9%	17.4%	2.5%	15.3%
Total	76.8%	12.4%	3.1%	7.8%

Source: South Dakota Department of Health

**Table 7: School Year 2004-2005 Age
Distribution by Regions**

Region	5-8 Years	9-11 Years	12-14 Years	15-19 Years
1	38.8%	30.6%	23.8%	6.8%
2	29.3%	40.4%	26.1%	4.2%
3	37.8%	33.7%	26.0%	2.5%
4	36.7%	27.4%	21.9%	13.9%
5	32.3%	37.6%	18.6%	11.4%
6	39.8%	28.5%	27.7%	4.0%
7	23.8%	30.1%	32.2%	13.9%
Total	33.2%	32.0%	26.1%	8.7%

Source: South Dakota Department of Health

**Table 8: School Year 2004-2005 At Risk For Overweight And
Overweight Body Mass Index For Age, By Regions**

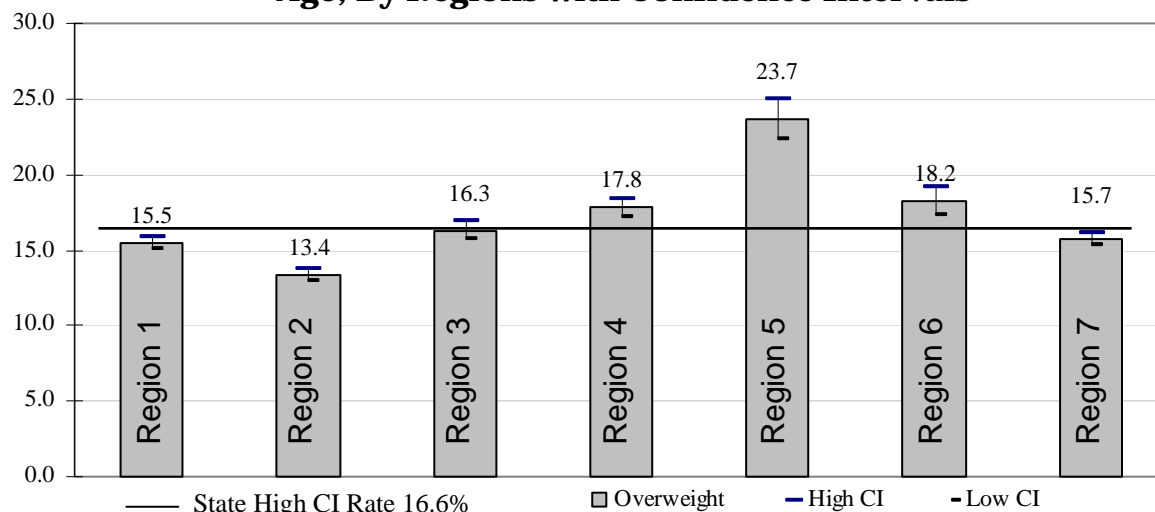
Region	Number of Students	At Risk For Overweight	Overweight	At Risk For Overweight And Overweight Combined
1	7,775	17.2%	15.5%	32.7%
2	5,557	15.7%	13.4%	29.1%
3	3,371	17.1%	16.3%	33.4%
4	5,719	16.9%	17.8%	34.7%
5	1,901	17.5%	23.7%	41.2%
6	3,131	17.5%	18.2%	35.7%
7	7,920	15.7%	15.7%	31.4%
Total	35,489	16.6%	16.4%	33.0%

Source: South Dakota Department of Health

Figure 8 illustrates that regions 1, 2, and 7 are significantly below the state high confidence interval rate of 16.6%. Regions 4, 5, and 6 are significantly higher than the state high confidence

interval rate. Region 3 is not significantly different as it falls into the state wide range of 16.2 percent to 16.6 percent. See page 2 for meaning of confidence interval rates.

Figure 8: School Year 2004-2005 Overweight Body Mass Index For Age, By Regions with Confidence Intervals



Source: South Dakota Department of Health

Obesity Risk Factors

Obesity is a risk factor for the following conditions in adulthood: cardiovascular disease, hypertension, diabetes, degenerative joint disease, and psychological problems. Although commonly thought of as an adult disease, obesity is a growing problem in children and adolescents and its consequences are increasingly being seen. Overweight children and adolescents have increased blood lipids and other cardiovascular risk factors. Research shows that 60.0 percent of overweight 5- to 10-year-old children already have at least one risk factor for heart disease, including hyperlipidemia and elevated blood pressure or insulin levels. Type 2 diabetes in children, a disease that typically appears in adults, is increasing at alarming rates among children and adolescents. Liver disorders are more frequently found in overweight children and overweight

children also have more hypertension, sleep apnea, and orthopedic complications. Overweight children are taller and mature earlier than non-overweight children. (Dietz, *Pediatrics 101 Suppl*, March 1998).

However, the most widespread consequences of obesity in children are psychological. With a culture that generally prefers thinness, overweight children are targets of early and systematic discrimination. They have fewer friends and are regarded as lazy or sloppy. Obese adolescents develop a negative self-image. Children who mature early tend to have lower self-esteem. (Dietz, *Pediatrics 101 Suppl*, March 1998).

Being overweight during childhood increases the chance that the person will be overweight as an adult. Whitaker et

al (NEJM:1997;337-869-873) reported that 69 percent of overweight children 6 to 10 years will be obese at age 25, 83 percent of overweight children 10-15 years will be obese at age 25, and 77 percent of overweight adolescents 15-18 years will be obese at age 25. For children at risk of overweight, the percentages are 55, 75, and 67 respectively.

Comparison To Other Data

Height and weight data were measured nationally in a series of representative surveys ((National Health Examination Survey (NHES) and National Health and Nutrition Examination Survey (NHANES)). When the overweight definition is applied to data from earlier national health examination surveys, it is apparent that overweight in children and adolescents was relatively stable from the 1960s to 1980. However, from NHANES II (1976-80) to NHANES III, the prevalence of overweight nearly doubled among children and adolescents. In the time interval between NHANES II and III, the prevalence of overweight among children ages 6-11 years increased from an estimated 7 percent to 11 percent, and among adolescents ages 12-19 years, increased from 5 percent to 11 percent. NHANES IV results for 1999-2002 indicate that 16.0 percent of children, ages 6 to 11 are overweight and 16.0 percent of teens ages 12 to 19 are overweight. Although South Dakota uses slightly different age group categories for analysis and the reference standards have changed slightly, the South Dakota data are higher than the national data collected.

By using the Pediatric Nutrition Surveillance System or PedNSS, the South Dakota Department of Health has collected height and weight data of infants and children participating in the South

Dakota Supplemental Nutrition Program for Women, Infants, and Children (WIC) since 1995. WIC serves children under the age of 5 who are at nutritional risk and are from families with limited incomes. The 2004 rate of overweight, ages 2 to 5 years was 13.9 percent, up from 13.6 percent in 2003. The three-year period (2002-2004) rate for overweight children was 13.4 percent.

A study was done to determine the prevalence of overweight and obesity in American Indian children and adolescents attending schools in the Aberdeen Area Indian Health Service (SD, ND, IA, and NE). Height and weight were measured for 12,559 children aged 5-17 years and reported in the *International Journal of Obesity* (1999) 23, Suppl 2. The study showed the age-adjusted prevalence of overweight was 39.1 percent for males and 38.0 percent for females and the age-adjusted prevalence for obesity was 22.0 percent for males and 18.0 percent for females.

Prevention Of Child Overweight And Child Obesity

Child overweight and child obesity is a multi-faceted problem that should be addressed by promoting healthy eating and increasing physical activity and decreasing inactivity. While needing to prevent overweight and obesity in children, care must be taken not to encourage weight preoccupation, inappropriate eating habits, and extreme amounts of exercise associated with eating disorders in youth.

The following guidelines are steps for everyone to take to prevent child overweight and obesity. Schools can get help to develop wellness policies at http://doe.sd.gov/oess/cans/docs/Wellness_Policy.pdf. There is also additional information on the Healthy South Dakota website at www.healthy.sd.gov.

What Everyone Can Do

- Set a good example by being physically active and eating a healthy, balanced intake high in fruits, vegetables, and whole grains.
- Advocate for convenient, safe, and adequate places for young people to play and take part in physical activity programs.
- Support daily physical education and other school programs that promote lifelong healthy eating and physical activity, not just competitive sports.
- Urge parent associations and school clubs to sell healthy foods or nonfood items for fund-raising activities.
- Join a school health or nutrition advisory council, such as Team Nutrition, to help guide nutrition policy and educational programs.
- Access walking and bicycling trails in your community and area parks.
- Participate in Walk in the Park activities at South Dakota state parks. For schedule see: <http://www.sdqfp.info/Parks/Calendar.htm>.
- Participate in Action for Healthy Kids network to improve the health and educational performance of children through better nutrition and physical activity in schools. <http://www.actionforhealthykids.org/>

What Parents Can Do

- Provide children with healthy food choices for meals and snacks.
- Provide healthy snacks for school parties and special events.
- Encourage children to be physically active.
- Involve children in selecting and preparing food.
- Learn what your children want from physical activity programs and help choose appropriate activities.
- Volunteer to help children's sports teams and recreation programs.
- Make physical activity a fun, family event.
- Serve as a role model for your children by eating a variety of healthy foods.
- Play and be physically active with children.
- Teach your children safety rules and make sure that they have the clothing and equipment needed to participate safely in physical activity.
- Limit television watching or video games to no more than two hours per day.

What Students Can Do

- Make healthy choices in the school cafeteria or when packing lunch.
- Walk to school where possible.
- Ask for healthy snacks.
- Set goals for increasing your physical activity and monitor your progress. Encourage friends and family members to be physically active and to eat healthfully.
- Use protective clothing and proper equipment to prevent injuries and illnesses.
- Encourage the student council to advocate for physical education classes and after-school programs that are attractive to all students and to request healthy food choices in school and at school events.
- Take elective courses in health, physical education, cooking, and nutrition.
- Help plan school and family menus. Limit television watching or computer games to no more than two hours per day.

What Teachers And Coaches Can Do

- Use curricula that follow CDC's *Guidelines for School and Community Programs to Promote Lifelong Physical Activity Among Young People*.
- Use curricula that follow CDC's *Guidelines for School Health Programs to Promote Lifelong Healthy Eating*.
- Use the South Dakota Health Education Content Standards and the South Dakota Physical Education Content Standards as guides for curriculum planning. <http://www.doe.sd.gov/contentstandards/>
- Contact Coordinated School Health in the Departments of Education and Health for technical assistance in selecting quality curriculum and increasing physical activity. <http://www.doe.sd.gov/oess/schoolhealth/index.asp>
- Participate in the Fantastic Fourth Grade "Scientific Expedition" Field Trip sponsored by SD Division of Parks and Recreation, (605) 773-3391.
- Promote walking at your school and participate in "SD Schools Walk" <http://www.doe.sd.gov/oess/schoolhealth/sdwalks/index.asp>
- Keep students moving during physical education classes.
- Offer healthy, appealing foods (such as fruits, vegetables, and low-fat grain products) wherever food is available and discourage the availability of foods high in fat, sodium, and added sugars (such as soda, candy, and fried chips) at school functions and trips and as part of fund-raising activities.
- Ensure that young people know safety rules and use appropriate protective clothing and equipment.
- Emphasize activity and enjoyment over competition.
- Help students become competent in many motor and behavioral skills.
- Provide nutrition education through activities that are fun, participatory, developmentally appropriate, and culturally relevant. Activities should emphasize the positive, appealing aspects of healthy eating rather than the harmful effects of unhealthy eating.
- Work with food nutrition managers, coaches, physical education teachers, and other staff to coordinate nutrition education efforts and give students consistent messages about healthy eating.
- Model good nutrition and physical activity habits.
- Involve physical activity when teaching in a classroom setting.
- Involve families and community organizations in physical activity programs.
- Refrain from using food to discipline or reward students.
- Request healthy snacks for class parties.
- Include in teaching a discussion of body image and societal pressures, especially for young girls.

What School Nutrition Staff Can Do

- Provide meals that are tasty and appealing to students and that meet USDA nutrition standards and the Dietary Guidelines for Americans.
- Support classroom lessons by offering foods to illustrate key messages, decorating the cafeteria with educational posters, and posting the nutritional content of foods served.

- Provide healthy sack lunches for students for out-of-school events such as athletic trips.
- Coordinate activities with classroom and physical education teachers and other staff.
- Involve students and families in planning school menus.
- Offer meals that reflect the cultural diversity and preferences of students.
- Take part in training sessions on nutrition education and on marketing school meals.
- Invite parents to lunch and give them information about the nutritional value of the meal.
- Stock vending machines with 100 percent fruit juice and other healthy snacks; make sure that healthy foods are served at school meetings and events.
- Limit the sale of high-fat, high-sugar snacks during mealtimes and as fund-raisers.
- Hire physical activity specialists and qualified coaches.
- Hire qualified food service and nutrition education staff.
- Ensure that school facilities are clean, safe, and open to students during nonschool hours and vacations.
- Provide health promotion programs for faculty and staff.
- Provide teachers with in-service training in physical activity promotion.
- Provide teachers and food nutrition staff with in-service training on healthy eating.
- Evaluate school nutrition and physical activity programs using the School Health Index.
- Use the South Dakota Health Education Content Standards and the South Dakota Physical Education Content Standards as guides for curriculum planning. <http://www.doe.sd.gov>
- Use *Fit, Healthy, and Ready to Learn* to help write school health policy. <http://www.nasbe.org/HealthySchools/fithealthy.html>

What School Administrators And Board Members Can Do

- Organize a school health or nutrition advisory committee that includes all key groups.
- Allocate adequate time for nutrition education as part of a sequential, comprehensive health education program.
- Make schools available for the public to use during the winter months for walking.
- Require health education and daily physical education for students in grades K-12.
- Become a *Team Nutrition* school and implement the program.
- Ensure that physical education and extracurricular programs offer lifelong activities, such as walking and dancing.
- Provide adequate time and space for students to eat meals in a pleasant, safe environment.
- Provide time during the day, such as recess, for unstructured physical activity, such as walking or jumping rope.

What School Nurses And Health Professionals Can Do

- Measure height and weight accurately and use the CDC growth charts to screen children and adolescents. <http://www.cdc.gov/nccdphp/dnpa/growthcharts/training/modules/>

- Provide anticipatory guidance to parents and children regarding healthy eating and physical activity habits including using *Bright Futures in Practice: Nutrition and Bright Futures in Practice Physical Activity*. <http://www.brightfutures.org>
- Evaluate children and adolescents with positive screens and refer as appropriate for intervention.
- Include in teaching a discussion of body image and societal pressures especially for young girls.
- Increase the availability of parks, public swimming pools, hiking and biking trails, and other places for physical activity, including sidewalks.
- Provide choices of healthy foods in vending machines.
- Ensure that physical facilities meet or exceed safety standards.
- Ensure that coaches have appropriate coaching competencies.
- Provide after-school programs for children.
- Work with schools, businesses, and community groups to ensure that low-income young people have transportation and appropriate equipment for physical activity programs.

What Communities Can Do

- Utilize “Strides to a Healthier Community” planning guide to evaluate your community. <http://www.healthysd.gov/documents/StrideCommunity.pdf>
- Provide a mix of competitive team sports and noncompetitive, lifelong fitness and recreation activities.

While prevention should be the goal, it is recognized that individual children may need specific plans of care. Schools are encouraged to work with their local health care providers to define when and how referrals for further evaluation and intervention are made for individual students.

Acknowledgements

A special thanks goes to the school personnel who submitted the data and to the Centers for Disease Control and Prevention for technical assistance. This is an ongoing project and schools are encouraged to continue to submit data they are collecting.

For More Information

For additional ideas about how to address overweight and obesity, try these websites:

Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion, Division of Adolescent and School Health: <http://www.cdc.gov/HealthyYouth>

Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion, Division of Nutrition and Physical Activity: <http://www.cdc.gov/nccdphp/dnpa>

School Health Index for Physical Activity and Healthy Eating: A Self-Assessment and Planning Guide: <http://apps.nccd.cdc.gov/shi/>

Action for Healthy Kids, nationwide initiative with guidance provided by more than 30 national organizations and government agencies: <http://www.actionforhealthykids.org>

Promoting Physical Activity A Guide to Community Action: <http://www.cdc.gov/nccdphp/dnpa/pahand.htm>

Team Nutrition—Healthy School Meals Resource System: <http://schoolmeals.nal.usda.gov/>

BodyWise Handbook: Eating Disorders Information for Middle School Personnel: <http://www.4woman.gov/BodyImage/bodywise.cfm>

South Dakota Department of Education: <http://www.doe.sd.gov/oess/schoolhealth/index.asp>

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BMI – Body Mass Index: BMI for Children and Teens. BMI is used differently with children than it is with adults. <http://www.cdc.gov/nccdphp/dnpa/bmi/bmi-for-age.htm>

Appendix 1:
Directions for Completing School Heights and Weights Data Sheet

1. **School Name and County:** Provide full name of school and county in which school is located.
Provide Grade Level of School: High School, Jr. High, or Middle School, Elementary School, etc.
District Name: Report the name of the school district in which the school is located.
Mailing Address of School, Town, Zip Code: This information is needed for mailing reports and information to the school. Provide the complete mailing address.
Contact Name and Telephone Number: This information is needed in case there are questions about the data. Provide the name of the contact person and their telephone number.
Building Principal's Name, Mailing Address, and Telephone Number: This information is needed for contact purposes.
2. **Date of Measurement:** Complete date using month, day, and year. If data was obtained on September 2, 1999 enter 09 02 1999. Use a **separate page for each day** data is collected. Please send data as obtained rather than wait until the end of the school year to send the recorded data.

Information on each student measured:

3. **Name of student:** This information is optional and should be removed before submitting the data. It is provided for local school information only.
4. **ID#:** Each child measured needs a unique identification number. It can just be numerical order but three digits should be used (i.e., 001, 002, etc). The number is to be used for data collection purposes only. **Please do not use an i.d. number more than once.**
5. **Sex:** Enter sex of student as either M (male) or F (female).
6. **Date of Birth:** Record person's date of birth. If date of birth is May 8, 1990, record as follows:

mo.		day		year			
0	5	0	8	1	9	9	0

7. **Ethnic Origin/Race:** Enter ethnic origin. This is to be completed by observation of race. Select one of the categories listed or Other. Enter number as follows:

1. White, not Hispanic
2. Black, not Hispanic
3. Hispanic
4. American Indian or Alaskan Native
5. Asian or Pacific Islander
6. S.E. Asian Refugee
7. Other
8. Not Specified

8. **Height:** Enter height of individual. Use inches to the nearest 1/8 inch. Do not change denominator of fraction. Always convert to eighths: 3/4 should be converted to 6/8, 1/4 to 2/8, etc. If height is 45 1/8 inches, record as follows:

4	5	1/8
---	---	-----

Allowable entries for numerator of fraction are 0-7. **Do not leave blank if zero.** Do not use 9 for unknown fraction unless inches are unknown also. If height is 62 inches, record as follows:

6	2	0/8
---	---	-----

Below is a conversion chart to convert feet and inches to inches. This has been added to the report form for ease of reporting height in inches, as required.

Ft. In. = Inches	Ft. In. = Inches	Ft. In. = Inches	Ft. In. = Inches
3 0 = 36	4 0 = 48	5 0 = 60	6 0 = 72
3 1 = 37	4 1 = 49	5 1 = 61	6 1 = 73
3 2 = 38	4 2 = 50	5 2 = 62	6 2 = 74
3 3 = 39	4 3 = 51	5 3 = 63	6 3 = 75
3 4 = 40	4 4 = 52	5 4 = 64	6 4 = 76
3 5 = 41	4 5 = 53	5 5 = 65	6 5 = 77
3 6 = 42	4 6 = 54	5 6 = 66	6 6 = 78
3 7 = 43	4 7 = 55	5 7 = 67	6 7 = 79
3 8 = 44	4 8 = 56	5 8 = 68	6 8 = 80
3 9 = 45	4 9 = 57	5 9 = 69	6 9 = 81
3 10 = 46	4 10 = 58	5 10 = 70	6 10 = 82
3 11 = 47	4 11 = 59	5 11 = 71	6 11 = 83

Height should be measured with metal measuring tape and right-angle headpiece or full-length measuring board to insure accuracy. Do not use the measuring rod on the adult balance beam weight scale because it is not accurate. Have individual remove shoes, heavy outer clothing, hats, and hair barrettes. Procedure:

- (1) Have the individual stand with his/her back against the wall on a flat floor directly in front of the measuring tape. The tape should run directly down the center of his/her back.
 - (2) Individual should stand with feet slightly apart and the back as straight as possible. The heels, buttocks, and shoulder blades should touch the wall or surface of the measuring board.
 - (3) Have individual look straight ahead with head erect but not touching the wall or measuring board.
 - (4) Place the headpiece flat against the wall and at a right angle to the head. Lower it until it firmly touches the crown of the head.
 - (5) Hold the right-angle headpiece steady and have the person move out from under it.
 - (6) Read the measurement at eye level where the lower edge of the headpiece intersects the measuring tape.
 - (7) Repeat the procedure until two measurements agree within 1/4 inch. Record the larger of the two measurements on the form.
9. **Weight:** Enter weight of individual. Use pounds to the nearest 1/4 pound. Do not change the denominator of the fraction. Always convert to fourths; 1/2 should be converted to 2/4, 4/16 to 1/4, etc. For example, if weight is 56 1/2 pounds, record as follows:

0	5	6	2/4
---	---	---	-----

Do not leave numerator of fraction blank if zero. Do not use 9 for unknown fraction unless pounds are unknown also! For example, 125 pounds should be recorded as follows:

1	2	5	0/4
---	---	---	-----

Weight should be taken without shoes or heavy outer clothing. Use adult beam balance scale if at all possible. Scale needs to be placed on uncarpeted floor if possible for an accurate weight. Child needs to stand on the center of scale platform and not be touching other objects or person. Child should be weighed, step off the scale, and then weighed again to insure an accurate weight.

10. **Submit data as soon as possible after measurements are taken**, though data will be accepted throughout the year, the summary of data will be reported by calendar year. Send all data to:

Mary Sarvis
 South Dakota Department of Health
 600 E. Capitol
 Pierre, SD 57501-2535 Fax: 605/773-5683

SCHOOL HEIGHTS/WEIGHTS

County: _____

District Name: _____

City: _____

Contact Person: _____

Contact's Telephone: _____

Contact's City: _____

Building Principal's Name: _____

Principal's Address (if different/Sch): _____

Principal's Zip Code: _____

Grade Levels of School: _____

Mailing Address of School: _____

Zip Code: _____

Contact's Email Address: _____

Contact's Address (if different/Sch): _____

Contact's Zip Code: _____

Principal's Telephone: _____

Principal's City: _____

Principal's Email Address: _____

Date of Measurements:

MO. DAY YEAR

Converting Feet & Inches to Inches

Name (For your use only – remove before submitting)	ID#	Sex (required)	DOB (required)			Race	Height		Weight		Ft.	In. = Inches		Ft.	In. = Inches	
			mo	day	year		inches	8's	pounds	4's						
								/8		/4	3	0 =	36	5	3 =	63
								/8		/4	3	1 =	37	5	4 =	64
								/8		/4	3	2 =	38	5	5 =	65
								/8		/4	3	3 =	39	5	6 =	66
								/8		/4	3	4 =	40	5	7 =	67
								/8		/4	3	5 =	41	5	8 =	68
								/8		/4	3	6 =	42	5	9 =	69
								/8		/4	3	7 =	43	5	10 =	70
								/8		/4	3	8 =	44	5	11 =	71
								/8		/4	3	9 =	45	6	0 =	72
								/8		/4	3	10 =	46	6	1 =	73
								/8		/4	3	11 =	47	6	2 =	74
								/8		/4	4	0 =	48	6	3 =	75
								/8		/4	4	1 =	49	6	4 =	76
								/8		/4	4	2 =	50	6	5 =	77
								/8		/4	4	3 =	51	6	6 =	78
								/8		/4	4	4 =	52	6	7 =	79
								/8		/4	4	5 =	53	6	8 =	80
								/8		/4	4	6 =	54	6	9 =	81
								/8		/4	4	7 =	55	6	10 =	82
								/8		/4	4	8 =	56	6	11 =	83
								/8		/4	4	9 =	57	7	0 =	84
								/8		/4	4	10 =	58	7	1 =	85
								/8		/4	4	11 =	59	7	2 =	86
								/8		/4	5	0 =	60	7	3 =	87
								/8		/4	5	1 =	61	7	4 =	88
								/8		/4	5	2 =	62	7	5 =	89

NOTES: **RACE:** 1 = White, not Hispanic 2 = Black, not Hispanic 3 = Hispanic 4 = American Indian or Alaskan Native
5 = Asian or Pacific Islander 6 = S.E. Asian Refugee 7 = Other 9 = Not Specified
SEX: 1 or M for Male; 2 or F for Female **HEIGHT:** to the nearest 1/8 inch. **WEIGHT:** to the nearest 1/4 pound.

Appendix 2 Participating Schools

School Name	Education Service Agency	Region	County
Plankinton Schools Combined, Plankinton	3		Aurora
Stickney Schools Combined, Stickney	3		Aurora
White Lake Schools Combined, White Lake	3		Aurora
Buchanan Elementary, Huron.....	4		Beadle
Holy Trinity Catholic School, Huron	4		Beadle
Jefferson Elementary, Huron	4		Beadle
Madison Elementary, Huron	4		Beadle
Washington Elementary, Huron.....	4		Beadle
Wolsey/Wessington Schools, Wolsey.....	4		Beadle
Bennett County High School, Martin.....	6		Bennett
Scotland Schools Combined, Scotland.....	3		Bon Homme
Brookings High School, Brookings	1		Brookings
Central Elementary, Brookings	1		Brookings
Hillcrest Elementary, Brookings.....	1		Brookings
Medary Elementary, Brookings.....	1		Brookings
Sioux Valley Elementary, Volga.....	1		Brookings
Sioux Valley Junior High, Volga.....	1		Brookings
Volga Christian Elementary, Volga	1		Brookings
CC Lee Elementary, Aberdeen.....	4		Brown
Central High School, Aberdeen	4		Brown
Groton Schools Combined, Groton.....	4		Brown
Holgate Junior High School, Aberdeen.....	4		Brown
JDC, Aberdeen	4		Brown
Lincoln Elementary, Aberdeen.....	4		Brown
May Overby Elementary, Aberdeen.....	4		Brown
OM Tiffany Elementary, Aberdeen	4		Brown
Simmons Elementary, Aberdeen	4		Brown
Simmons Middle School, Aberdeen.....	4		Brown
Chamberlain Middle School, Chamberlain	3		Brule
Kimball Schools Combined, Kimball	3		Brule
Belle Fourche High School, Belle Fourche	7		Butte
Belle Fourche Middle School, Belle Fourche	7		Butte
North Park Elementary, Belle Fourche	7		Butte
South Park Elementary, Belle Fourche.....	7		Butte
Andes Central Elementary, Lake Andes.....	3		Charles Mix
Platte Elementary, Platte	3		Charles Mix
Irene Schools Combined, Irene	2		Clay
Jolley Elementary, Vermillion.....	2		Clay
Henry School District, Henry.....	1		Codington
Immaculate Conception, Watertown.....	1		Codington
Jefferson Elementary, Watertown.....	1		Codington
Mellette Elementary, Watertown.....	1		Codington
Watertown Middle School, Watertown.....	1		Codington
McIntosh Schools Combined, McIntosh.....	5		Corson
McLaughlin Elementary, McLaughlin	5		Corson
McLaughlin Schools Combined, McLaughlin	5		Corson
Rock Creek Elementary, Bullhead.....	5		Corson

Participating Schools (continued)

School Name	Education Service Agency Region	County
Wakpala Schools Combined, Wakpala.....	5.....	Corson
Gertie Belle Rogers Elementary, Mitchell.....	3.....	Davison
John Paul II Elementary, Mitchell.....	3.....	Davison
LB Williams Elementary, Mitchell.....	3.....	Davison
Longfellow Elementary, Mitchell.....	3.....	Davison
Mitchell Middle School, Mitchell.....	3.....	Davison
Mount Vernon Schools, Mount Vernon.....	3.....	Davison
Enemy Swim Day School, Waubay.....	1.....	Day
Roslyn Schools Combined, Roslyn.....	1.....	Day
Waubay Schools Combined, Waubay.....	1.....	Day
Webster Elementary, Webster.....	1.....	Day
Deuel Schools Combined, Clear Lake.....	1.....	Deuel
Eagle Butte Upper Elementary, Eagle Butte.....	5.....	Dewey
Isabel Elementary, Isabel.....	5.....	Dewey
Timber Lake Public School, Timber Lake.....	5.....	Dewey
Edmunds Central Schools Combined, Hosmer.....	5.....	Edmunds
Holy Cross Elementary, Ipswich.....	4.....	Edmunds
Bethesda Lutheran Elementary, Hot Springs.....	7.....	Fall River
Edgemont Schools, Edgemont.....	7.....	Fall River
Oelrichs Schools Combined, Oelrichs.....	7.....	Fall River
Blumengard Colony, Cresbard.....	4.....	Faulk
Brentwood Colony, Cresbard.....	4.....	Faulk
Evergreen Colony, Cresbard.....	4.....	Faulk
Faulkton Schools Combined, Faulkton.....	4.....	Faulk
Thunderbird Colony, Cresbard.....	4.....	Faulk
Big Stone City Schools, Big Stone City.....	1.....	Grant
Koch Elementary, Milbank.....	1.....	Grant
Milbank Middle School, Milbank.....	1.....	Grant
St. Lawrence Elementary, Milbank.....	1.....	Grant
Bonesteel-Fairfax Schools Comb., Bonesteel.....	3.....	Gregory
Burke Elementary, Burke.....	3.....	Gregory
Gregory Elementary, Gregory.....	3.....	Gregory
Gregory Schools Combined, Gregory.....	3.....	Gregory
Philip Schools Combined, Philip.....	7.....	Haakon
Hamlin Schools Combined, Hayti.....	1.....	Hamlin
Miller Elementary, Miller.....	4.....	Hand
Buchanan Elementary, Pierre.....	6.....	Hughes
Georgia Morse Middle, Pierre.....	6.....	Hughes
Jefferson Elementary, Pierre.....	6.....	Hughes
McKinley Elementary, Pierre.....	6.....	Hughes
Washington Elementary, Pierre.....	6.....	Hughes
Freeman Academy Combined, Freeman.....	2.....	Hutchinson
Freeman Schools Combined, Freeman.....	2.....	Hutchinson
Maxwell Colony Elementary, Scotland.....	3.....	Hutchinson
Menno Schools Combined, Menno.....	3.....	Hutchinson
Tschetter Colony Elementary, Olivet.....	2.....	Hutchinson
Wolf Creek Colony Elementary, Olivet.....	2.....	Hutchinson
Wessington Schools Comb., Wessington Springs.....	3.....	Jerauld
Jones County Schools, Murdo.....	6.....	Jones
De Smet High School, De Smet.....	1.....	Kingsbury

Participating Schools (continued)

School Name	Education Service Agency Region	County
Iroquois Schools Combined, Iroquois	4	Kingsbury
Lake Preston Elementary, Lake Preston	1	Kingsbury
Laura Ingalls Wilder, De Smet	1	Kingsbury
Chester Area Schools Combined, Chester	1	Lake
Lincoln Elementary, Madison	1	Lake
Madison High School, Madison	1	Lake
Madison Middle School, Madison	1	Lake
Oldham-Ramona Combined, Ramona	1	Lake
Rutland Elementary, Rutland	1	Lake
St. Thomas Elementary, Madison	1	Lake
Washington Elementary, Madison	1	Lake
Lead-Deadwood Schools, Lead	7	Lawrence
Spearfish Middle School, Spearfish	7	Lawrence
Harrisburg Elementary, Harrisburg	2	Lincoln
Lower Brule Elementary, Lower Brule	6	Lyman
Lyman Schools Combined, Presho	6	Lyman
Britton-Hecla Schools Combined, Britton	1	Marshall
Veblen Elementary, Veblen	1	Marshall
Bridgewater Elementary, Bridgewater	2	McCook
Canistota Elementary, Canistota	2	McCook
McCook Central Elementary, Salem	2	McCook
Montrose Schools Combined, Montrose	2	McCook
St. Mary's Elementary, Salem	2	McCook
Leola Schools Combined, Leola	4	McPherson
Alkali Elementary, Sturgis	7	Meade
Black Hawk Elementary, Black Hawk	7	Meade
Brown High School, Sturgis	7	Meade
Elm Springs Elementary, Elm Springs	7	Meade
Enning Elementary, Enning	7	Meade
Hereford Elementary, Hereford	7	Meade
Maurine Elementary, Faith	5	Meade
Piedmont/Stagebarn Elementary, Piedmont	7	Meade
Sturgis Elementary, Sturgis	7	Meade
Union Center Elementary, Union Center	7	Meade
Whitewood Elementary, Whitewood	7	Meade
Williams Middle School, Sturgis	7	Meade
Howard Elementary, Howard	1	Miner
Howard Schools Combined, Howard	1	Miner
All City Elementary, Sioux Falls	2	Minnehaha
Anne Sullivan Elementary, Sioux Falls	2	Minnehaha
Axtell Park Middle School, Sioux Falls	2	Minnehaha
Baltic Elementary, Baltic	1	Minnehaha
Baltic High School, Baltic	1	Minnehaha
Baltic Junior High School, Baltic	1	Minnehaha
Brandon Valley Middle School, Brandon	2	Minnehaha
Bridges, Sioux Falls	2	Minnehaha
Challenge Center, Sioux Falls	2	Minnehaha
Christ The King Elementary, Sioux Falls	2	Minnehaha
Christian Center Elementary, Sioux Falls	2	Minnehaha
Cleveland Elementary, Sioux Falls	2	Minnehaha

Participating Schools (continued)

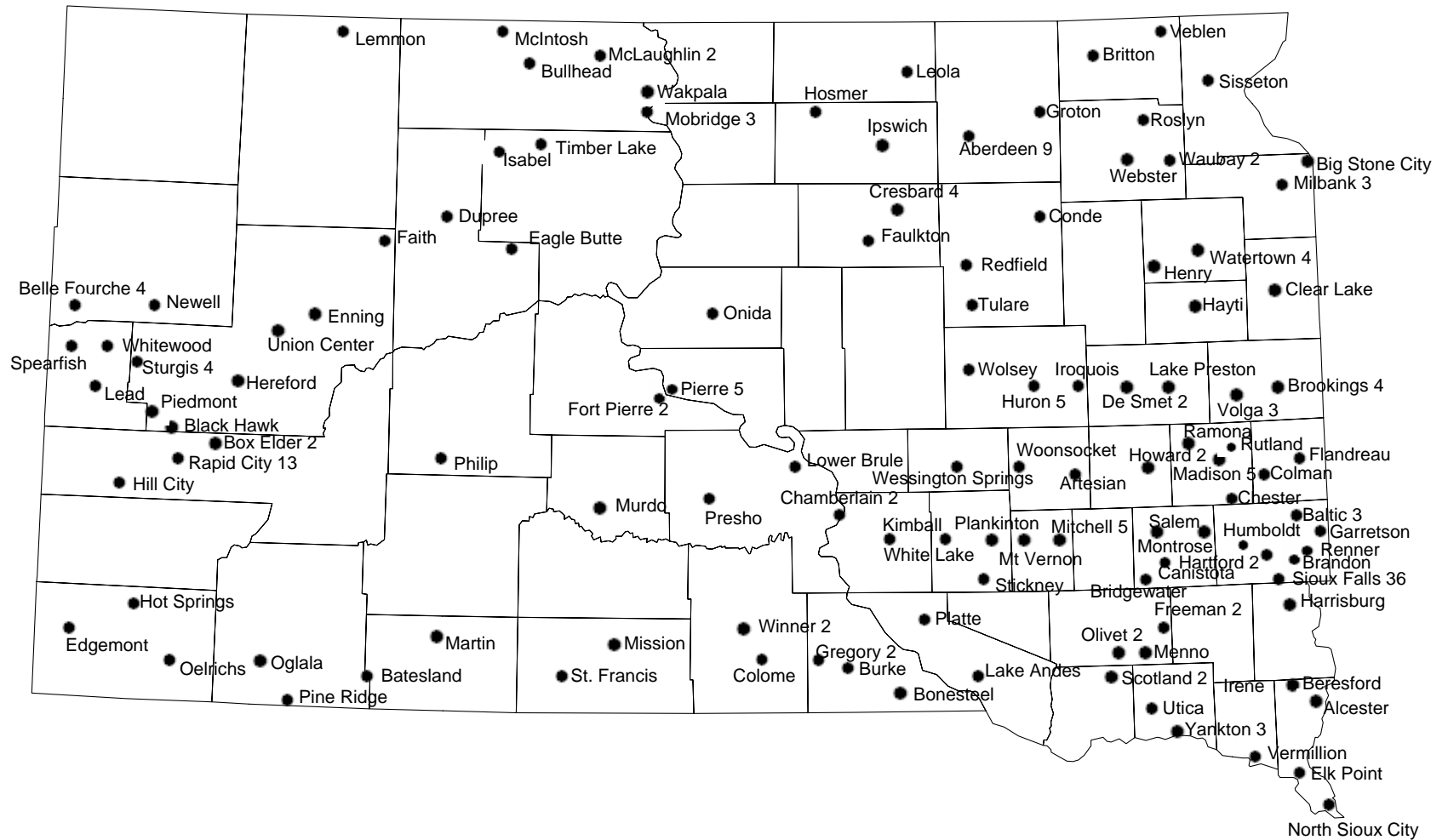
School Name	Education Service Agency Region	County
Dakotabilities, Sioux Falls.....	2.....	Minnehaha
Discovery Elementary, Sioux Falls	2.....	Minnehaha
Edison Middle School, Sioux Falls.....	2.....	Minnehaha
Eugene Field Elementary, Sioux Falls.....	2.....	Minnehaha
Garfield Elementary, Sioux Falls	2.....	Minnehaha
Garretson Schools Combined, Garretson.....	1.....	Minnehaha
Hawthorne Elementary, Sioux Falls.....	2.....	Minnehaha
Hayward Elementary, Sioux Falls.....	2.....	Minnehaha
Horace Mann Elementary, Sioux Falls	2.....	Minnehaha
JDC, Sioux Falls	2.....	Minnehaha
Joe Foss Alternative, Sioux Falls.....	2.....	Minnehaha
John F. Kennedy Elementary, Sioux Falls.....	2.....	Minnehaha
John Harris Elementary, Sioux Falls.....	2.....	Minnehaha
Laura B. Anderson Elementary, Sioux Falls	2.....	Minnehaha
Laura Wilder Elementary, Sioux Falls.....	2.....	Minnehaha
Lincoln High School, Sioux Falls	2.....	Minnehaha
Longfellow Elementary, Sioux Falls.....	2.....	Minnehaha
Mark Twain Elementary, Sioux Falls	2.....	Minnehaha
McKenna, Sioux Falls.....	2.....	Minnehaha
Memorial Middle School, Sioux Falls.....	2.....	Minnehaha
Oscar Howe Elementary, Sioux Falls	2.....	Minnehaha
Patrick Henry Middle School, Sioux Falls	2.....	Minnehaha
Renberg Elementary, Renner.....	2.....	Minnehaha
Robert Frost Elementary, Sioux Falls	2.....	Minnehaha
Roosevelt High School, Sioux Falls.....	2.....	Minnehaha
St. Joseph Cathedral School, Sioux Falls.....	2.....	Minnehaha
St. Lambert Elementary, Sioux Falls	2.....	Minnehaha
Terry Redlin, Sioux Falls	2.....	Minnehaha
Washington High School, Sioux Falls.....	2.....	Minnehaha
West Central Elementary, Hartford.....	2.....	Minnehaha
West Central Elementary, Humboldt	2.....	Minnehaha
West Central Middle School, Hartford	2.....	Minnehaha
Whittier Middle School, Sioux Falls	2.....	Minnehaha
Colman Elementary, Colman.....	1.....	Moody
Flandreau Elementary, Flandreau	1.....	Moody
Alternative Program, Rapid City	7.....	Pennington
Canyon Lake Elementary, Rapid City.....	7.....	Pennington
Central High School, Rapid City	7.....	Pennington
Corral Drive Elementary, Rapid City.....	7.....	Pennington
Dakota Middle School, Rapid City	7.....	Pennington
Douglas Middle School, Box Elder	7.....	Pennington
Hill City Elementary, Hill City	7.....	Pennington
Horace Mann Elementary, Rapid City	7.....	Pennington
Knollwood Heights Elementary, Rapid City	7.....	Pennington
North Middle School, Rapid City.....	7.....	Pennington
Pinedale Elementary, Rapid City.....	7.....	Pennington
Rapid Valley Elementary, Rapid City.....	7.....	Pennington
South Middle School, Rapid City	7.....	Pennington
Southwest Middle School, Rapid City.....	7.....	Pennington
Valley View Elementary, Rapid City	7.....	Pennington

Participating Schools (continued)

School Name	Education Service Agency Region	County
Vandenberg Elementary, Box Elder	7	Pennington
Lemmon Schools Combined, Lemmon.....	5	Perkins
Westside Elementary, Sisseton	1	Roberts
Artesian-Letcher Schools, Artesian	3	Sanborn
Woonsocket Elementary, Woonsocket	3	Sanborn
Batesland Elementary, Batesland.....	7	Shannon
Isna Wica Owayawa, Oglala.....	7	Shannon
Rockyford Elementary, Porcupine	7	Shannon
Wolf Creek Elementary, Pine Ridge	7	Shannon
Conde Schools Combined, Conde	4	Spink
Hitchcock-Tulare Schools, Tulare	4	Spink
Redfield Schools Combined, Redfield	4	Spink
Parkview Elementary, Fort Pierre	6	Stanley
Stanley Hayes Cheyenne, Fort Pierre	6	Stanley
Sully Buttes Schools Combined, Onida	6	Sully
O'kreek Elementary, Mission	6	Todd
St. Francis Indian Schools, St. Francis.....	6	Todd
Colome Schools Combined, Colome.....	3	Tripp
Westside Elementary, Winner	6	Tripp
Winner High School, Winner.....	6	Tripp
Alcester Elementary, Alcester.....	2	Union
Beresford Elementary, Beresford	2	Union
Dakota Valley Elementary, North Sioux City	2	Union
Elk Point-Jefferson Schools, Elk Point.....	2	Union
Freeman Davis Elementary, Mobridge	5	Walworth
General Beadle Elementary, Mobridge.....	5	Walworth
Mobridge Schools Combined, Mobridge.....	5	Walworth
Beadle Elementary, Yankton	3	Yankton
Jamesville Colony Elementary, Utica	3	Yankton
Sacred Heart, Yankton	3	Yankton
Yankton Christian School, Yankton	3	Yankton
Dupree Schools Combined, Dupree	5	Ziebach

Appendix 3

Schools Participating In Height & Weight Survey



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